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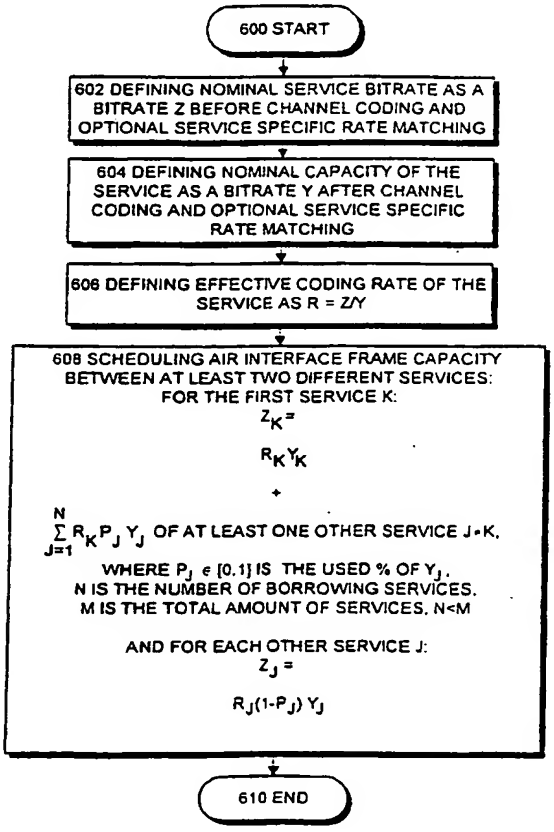
(54) Title: AIR INTERFACE CAPACITY SCHEDULING METHOD

(57) Abstract

The invention relates to a method for scheduling air interface capacity between user services in a radio system, and to a radio transmitter using the method. The method comprises the following steps: (602, 604, 606) defining a nominal service bit rate, a nominal capacity of the service, and an effective coding rate of the service; (608) scheduling air interface frame capacity between at least two different services: computing the bit rate of the first service by multiplying the nominal capacity of the first service by the effective coding rate of the first service, and adding to this normal bit rate of the first service the borrowed extra capacity of at least one other service, and the bit rate obtained from the extra capacity is computed by multiplying a predetermined amount of the nominal capacity of the other service by the effective coding rate of the first service.



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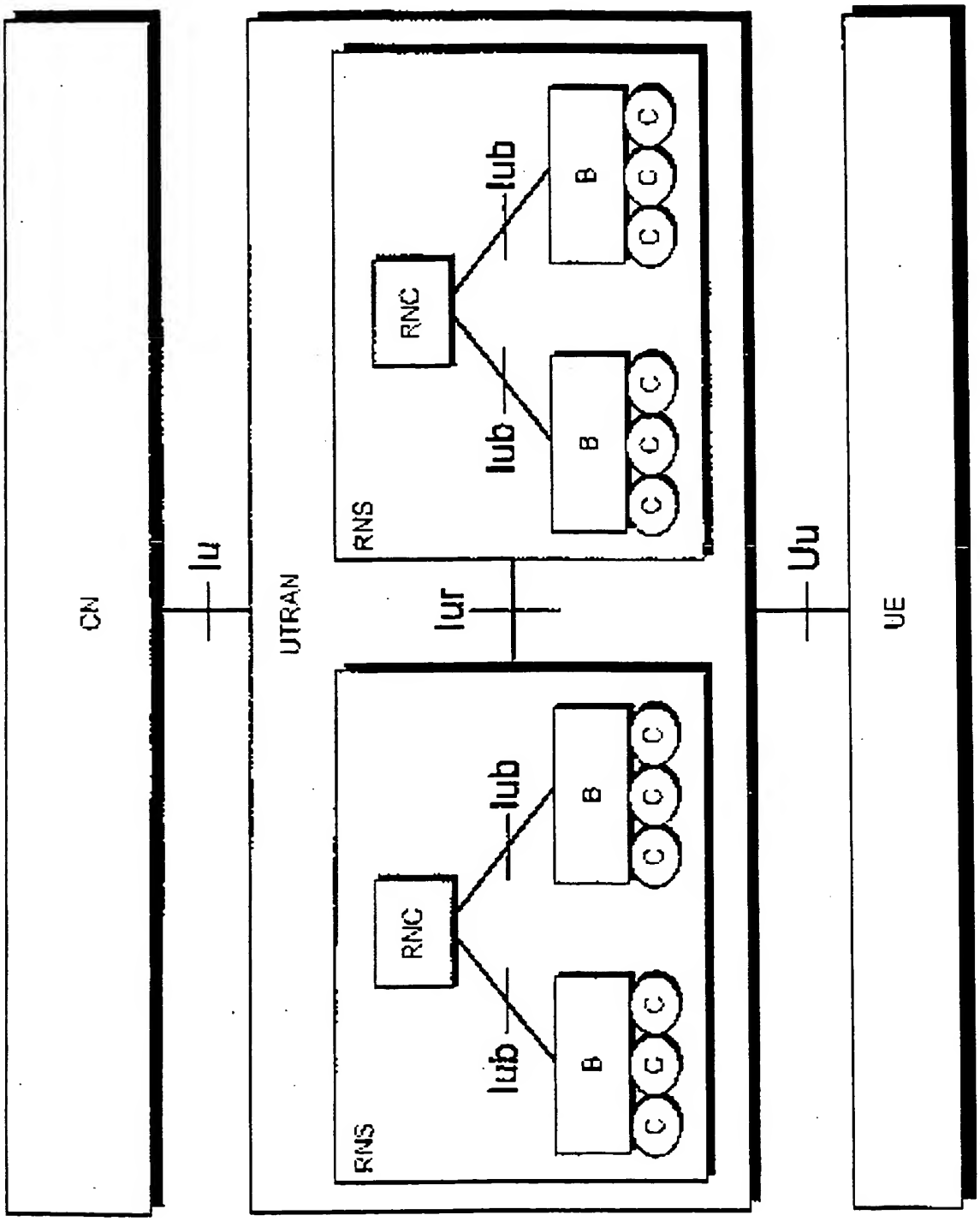
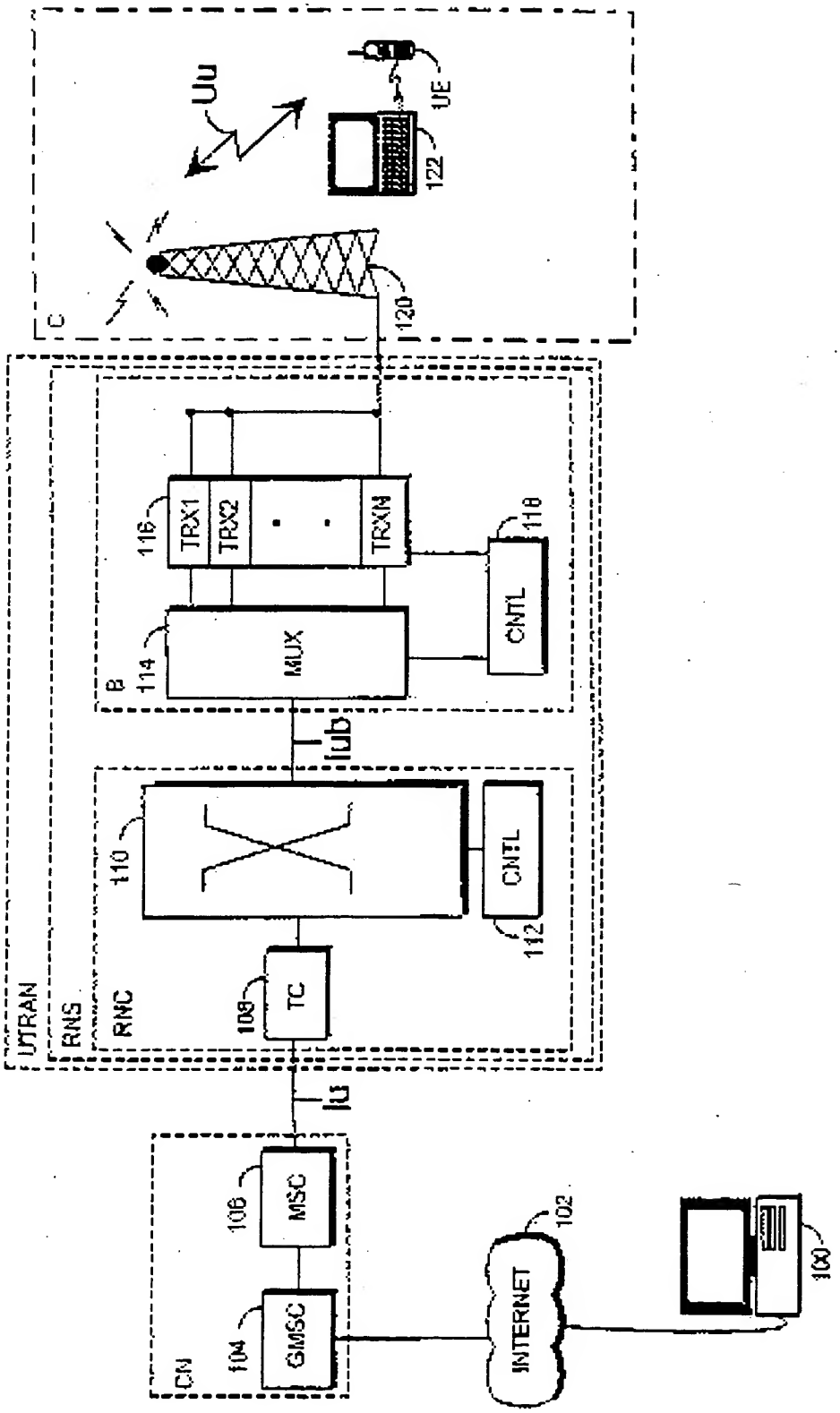


Fig 1A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UE
122
C
120
116
TRX1
TRX2
TRXN
118
CNTL
MUX
114
B
Iub
110
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TC
Iu
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MSC
104
GMSC
CN
INTERNET
102
100

Fig 1B

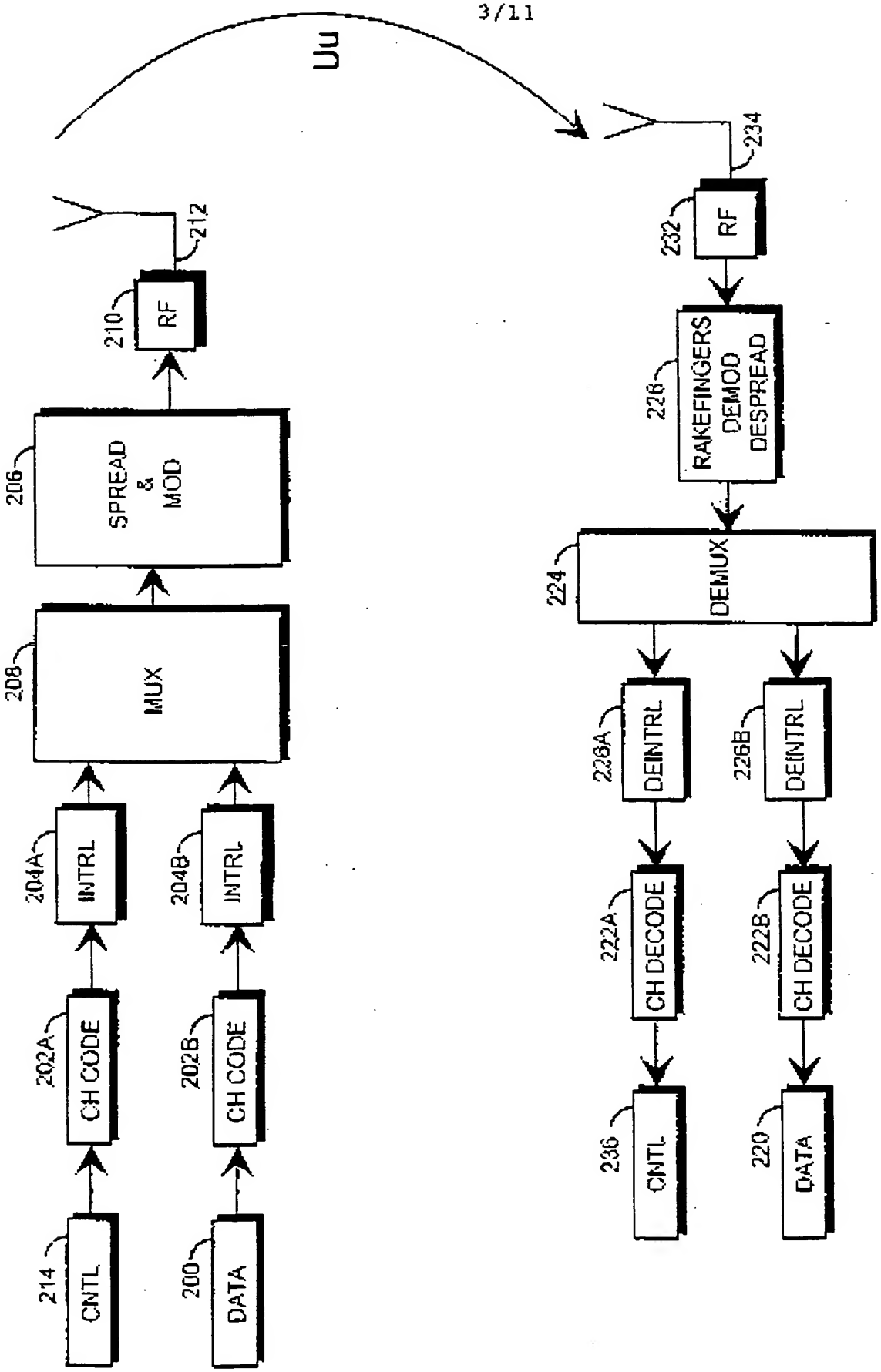

Fig 2A

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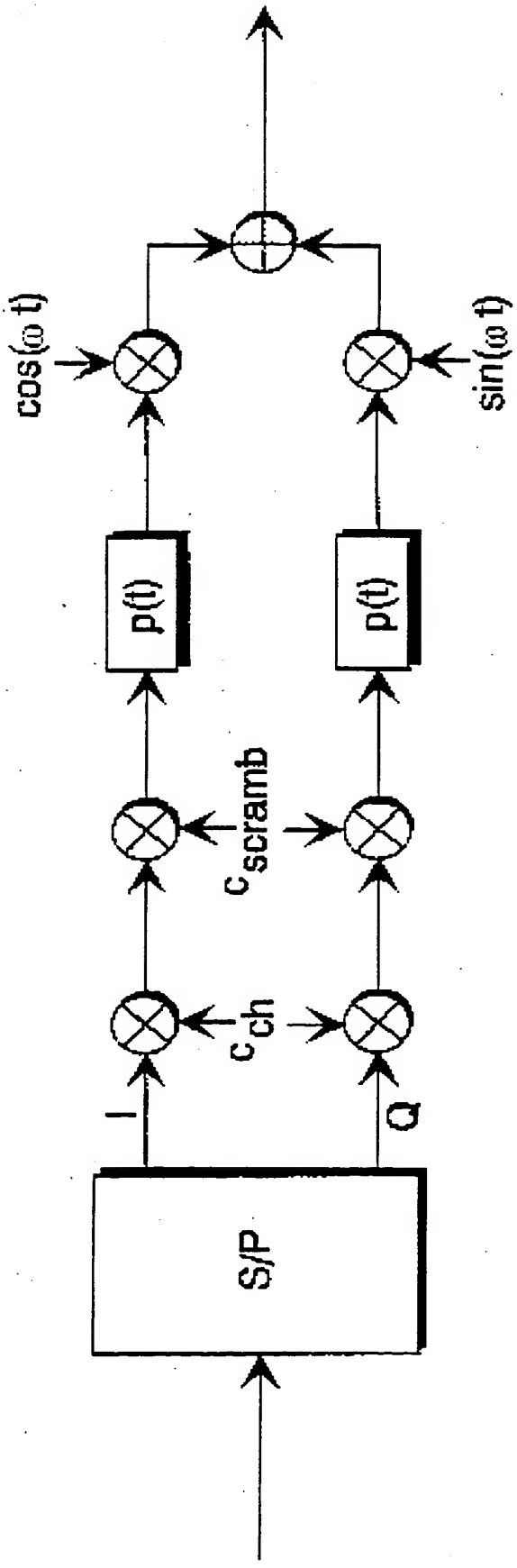

Fig 2B

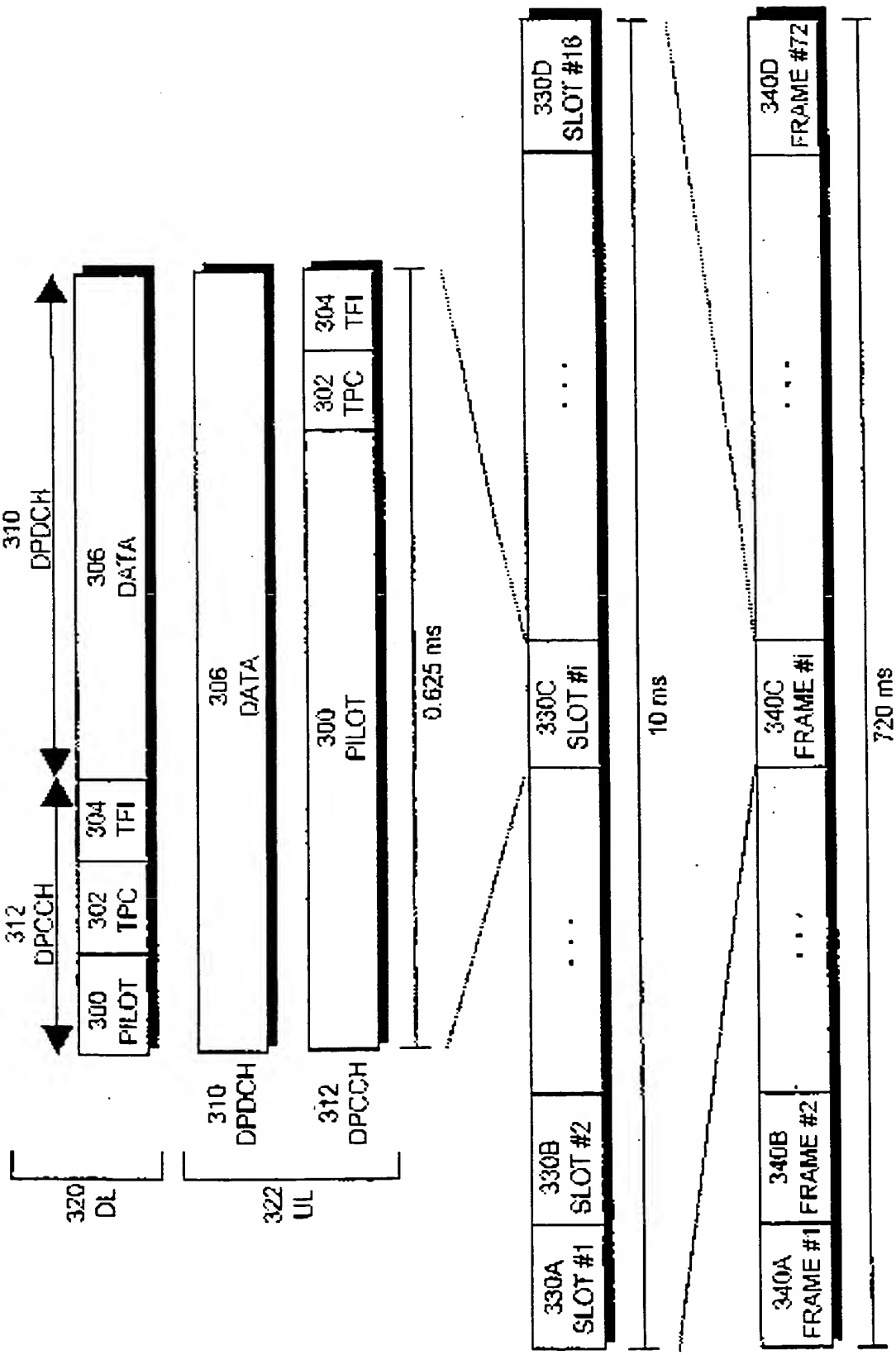

Fig 3

ISOOCID: <WO 0033589A1TI >

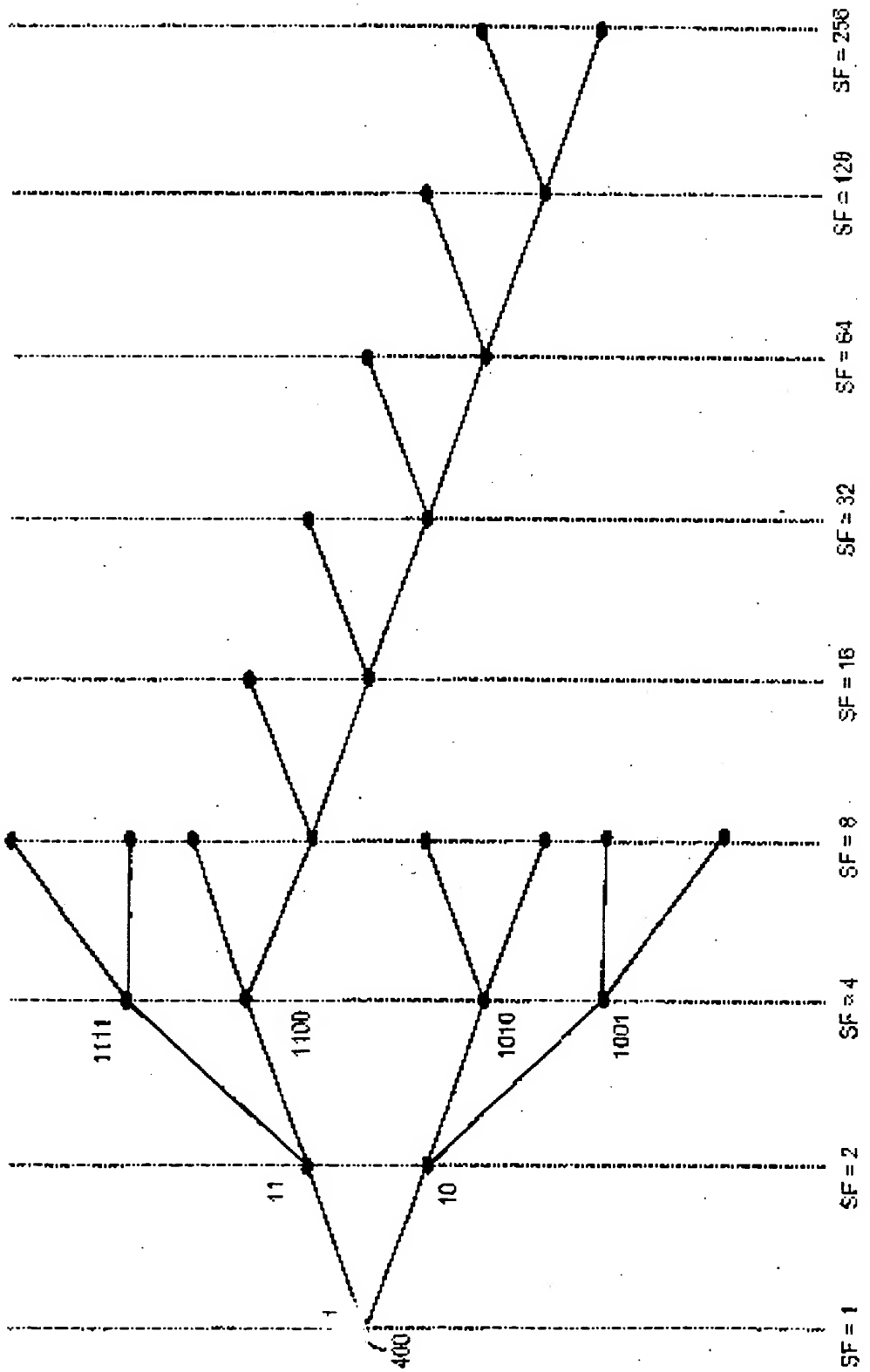

Fig 4

NSDOCID: <WO 0033589A1T >

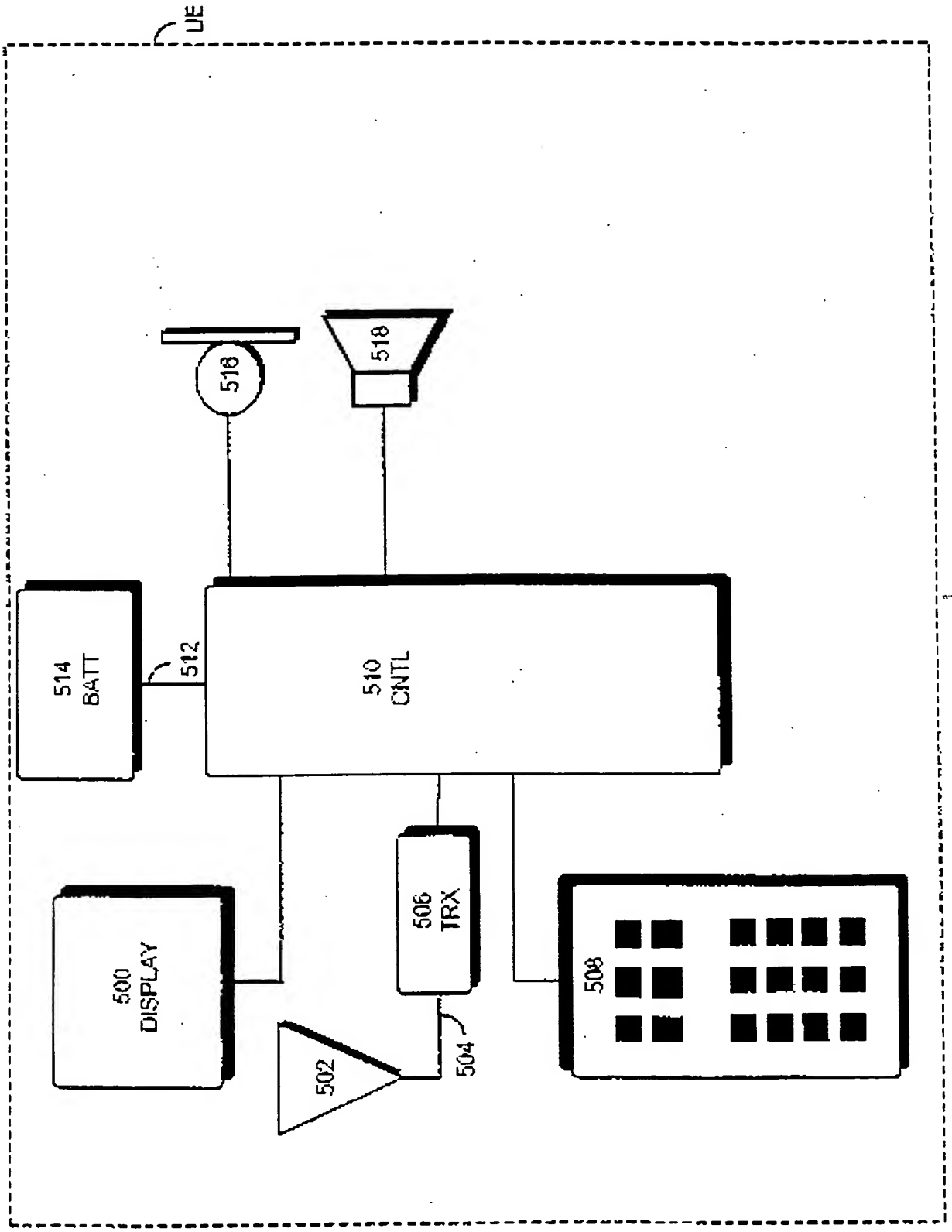

Fig 5

SDOCID <WO 0033589A1TL>

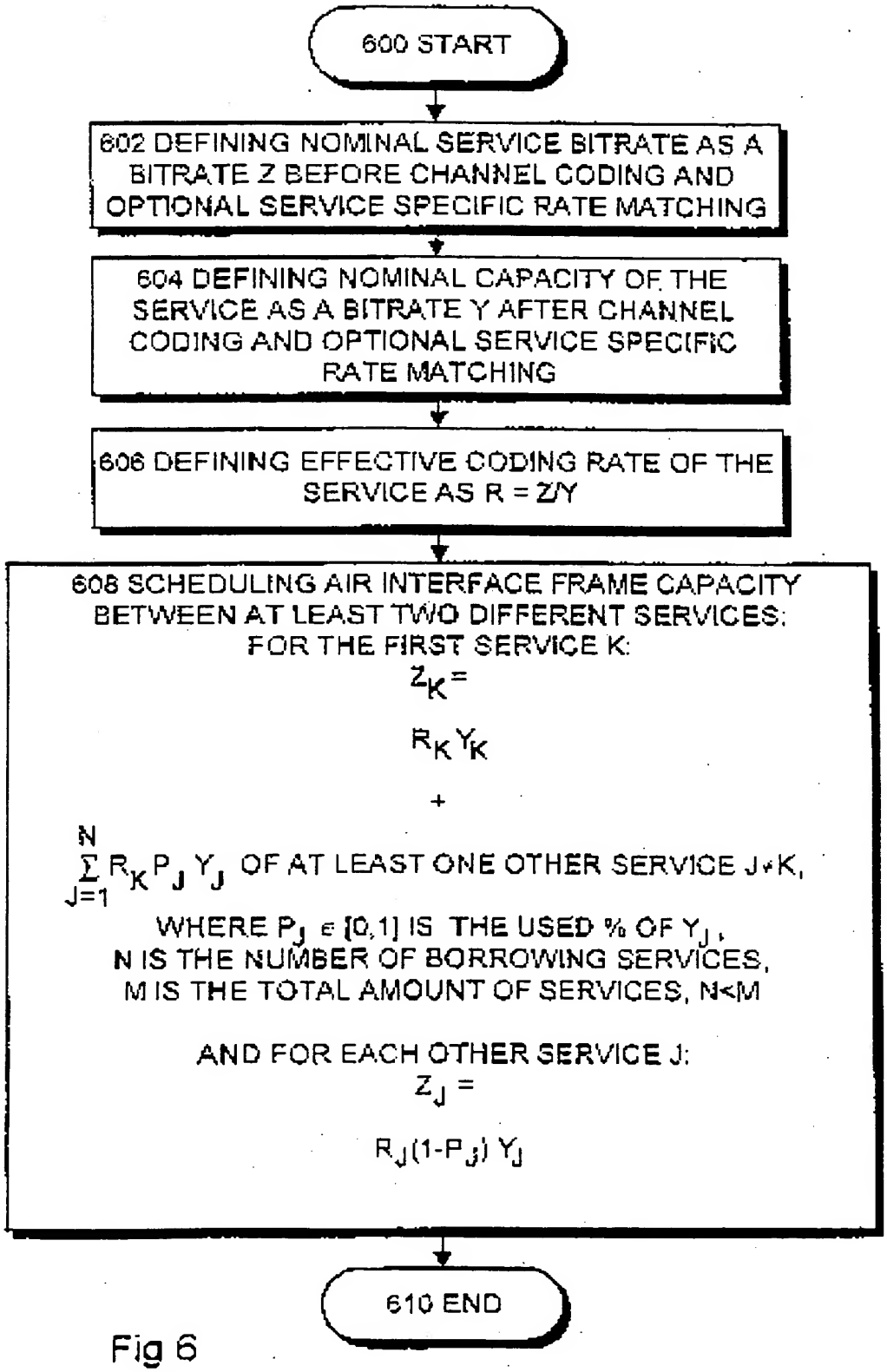
600 START
602 DEFINING NOMINAL SERVICE BITRATE AS A BITRATE Z BEFORE CHANNEL CODING AND OPTIONAL SERVICE SPECIFIC RATE MATCHING
604 DEFINING NOMINAL CAPACITY OF THE SERVICE AS A BITRATE Y AFTER CHANNEL CODING AND OPTIONAL SERVICE SPECIFIC RATE MATCHING
606 DEFINING EFFECTIVE CODING RATE OF THE SERVICE AS R = Z/Y
608 SCHEDULING AIR INTERFACE FRAME CAPACITY BETWEEN AT LEAST TWO DIFFERENT SERVICES:
FOR THE FIRST SERVICE K:
$Z_K = R_K Y_K + \sum_{J=1}^{N} R_K P_J Y_J$ OF AT LEAST ONE OTHER SERVICE J≠K,
WHERE $P_J \in [0,1]$ IS THE USED % OF Y_J,
N IS THE NUMBER OF BORROWING SERVICES,
M IS THE TOTAL AMOUNT OF SERVICES, N<M
AND FOR EACH OTHER SERVICE J:
$Z_J = R_J(1-P_J) Y_J$
610 END

Fig 6

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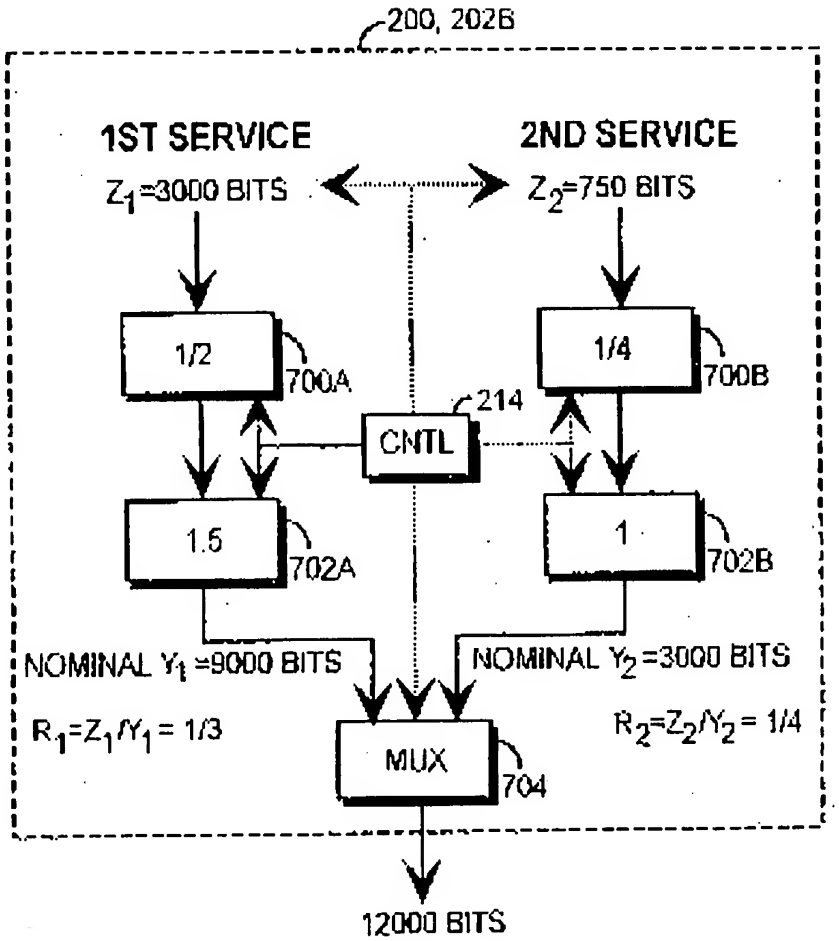

Fig 7A

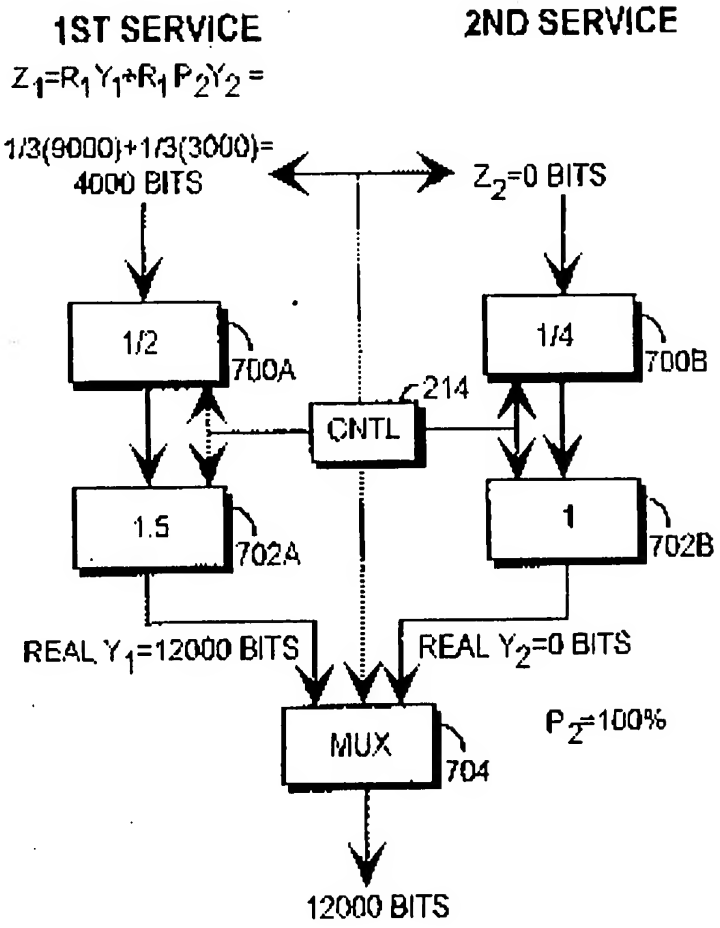

Fig 7B

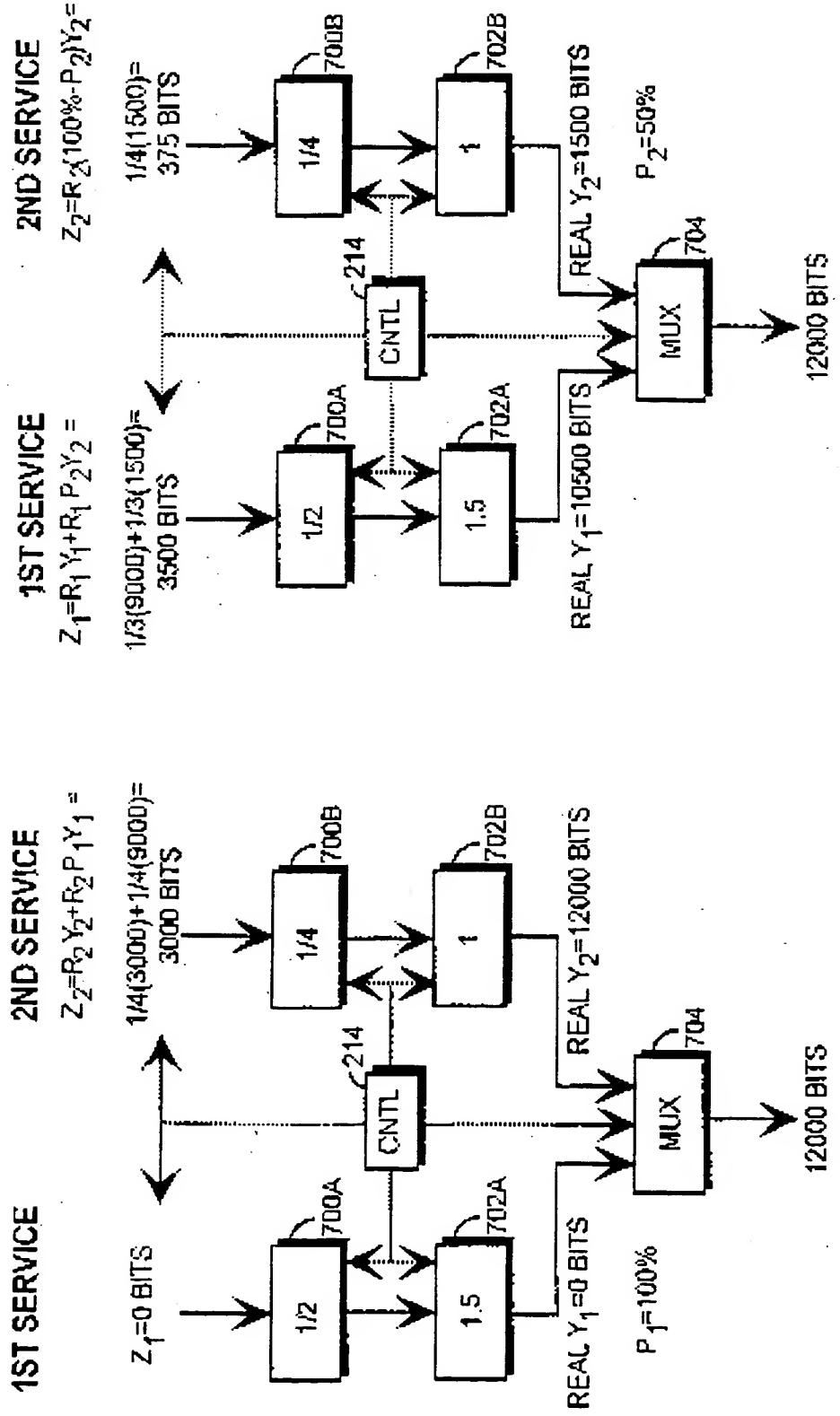
1ST SERVICE
2ND SERVICE
Z_1=0 BITS
$Z_2=R_2Y_2+R_2P_1Y_1$ =
1/4(3000)+1/4(9000)=
3000 BITS
700A
700B
1/2
1.5
1/4
1
702A
702B
214
CNTL
MUX
704
REAL Y_1=0 BITS
REAL Y_2=12000 BITS
P_1=100%
12000 BITS

Fig 7C

1ST SERVICE
2ND SERVICE
$Z_1=R_1Y_1+R_1P_2Y_2$ =
$Z_2=R_2(100\%-P_2)Y_2=$
1/3(9000)+1/3(1500)=
3500 BITS
1/4(1500)=
375 BITS
700A
700B
1/2
1.5
1/4
1
702A
702B
214
CNTL
MUX
704
REAL Y_1=10500 BITS
REAL Y_2=1500 BITS
P_2=50%
12000 BITS

Fig 7D

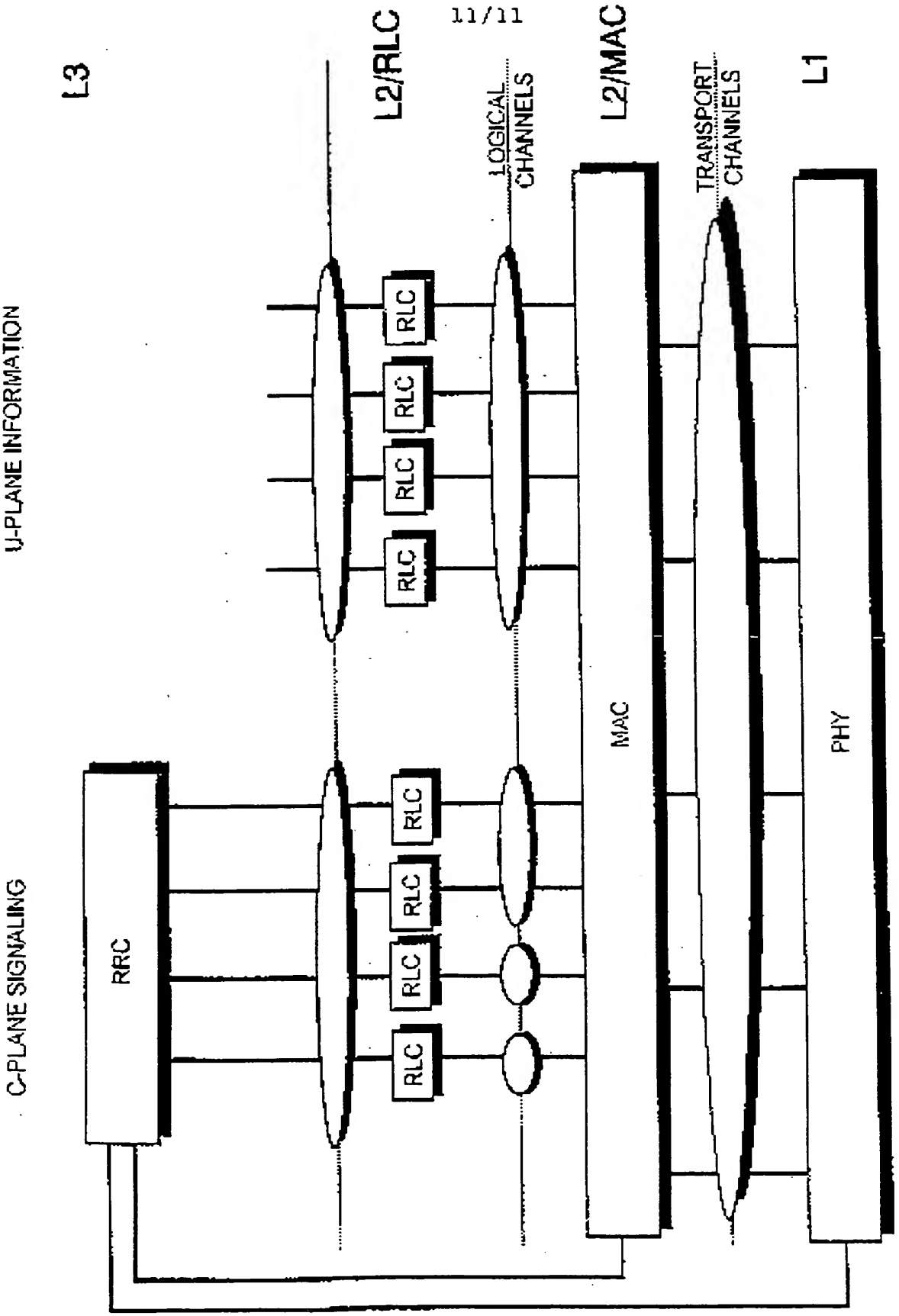

Fig 8

SDOCID: <WO 0033589A1>

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